I claim:

1. A method of compressing a current image of a sequence of images, the method comprising the steps of:

(a) transforming the current image with a predetermined transform to provide a set of transform coefficients;

(b) retrieving, for at least one transform coefficient of the current image, one or more, but not all, bits of a corresponding transform coefficient of a previously compressed image of the sequence, wherein the corresponding transform coefficient is truncated at a truncation bitplane and the retrieved bits comprise the least significant bit of the truncated corresponding transform coefficient;

(c) setting the at least one transform coefficient of the current image to a new value that is a function of the retrieved bits;

(d) storing one or more, but not all, bits of the at least one transform coefficient for use in compressing one or more subsequent images of the sequence; and

(e) coding the transform coefficients of the current image to provide a compressed bitstream of the current image.

2. A method according to claim 1 wherein the number of retrieved bits is two bits.

3. A method according to claim 2 wherein the step of setting the transform coefficient of the current image to a new value is only performed if a predetermined criterion is satisfied, the criterion depending on the truncation bitplane of the corresponding transform coefficient of the previous image.

4. A method according to claim 3 wherein the predetermined criterion is:

$(Q[|C^n|,L(n-1)] == 0 \;\&\&\; Q[|C^n|,L(n-1)+1] != 0 \;\&\&\; c_{L(n-1)}{}^{n-1}==1) \;||$

$Q[|C^n|,L(n-1)] > 0,$

where C^n is the transform coefficient of the current image n, $L(n-1)$ is the truncation bitplane of the previous image $(n-1)$ and $c_{L(n-1)}^{n-1}$ is the least significant bit of the retrieved bits.

5. A method according to claim 4 wherein the predetermined criterion further comprises one or more conditions selected from the set consisting of:

$Q[|C^n|,L(n-1)] == 0$;

$Q[|C^n|,L(n-1)] \neq \sum_{j=1}^{L} 2^{-j}$; and

$L(n-1)==L(n-2)$.

6. A method according to claim 2 wherein the new value of the at least one transform coefficient is set by:

$$|C^n|=|C^n| + (c_{L(n-1)}^{n} - c_{L(n-1)}^{n-1})*(2*| c_{L(n-1)-1}^{n} - c_{L(n-1)-1}^{n-1}|-1)*2^{-L(n-1)}.$$

7. A method according to claim 1 wherein the predetermined transform is a discrete wavelet transform (DWT).

8. A method according to claim 1 wherein each image of the sequence is compressed substantially to the same predetermined rate.

9. A method according to claim 1 wherein the compressed bitstream is substantially conformant with Motion JPEG2000.

10. A method according to claim 7 wherein the at least one transform coefficient is a member of a subset of transform coefficients, wherein the subset is selected from the group consisting of:

(i) all transform coefficients of the current image;

(ii) all transform coefficients of predetermined Motion JPEG2000 code blocks;

(iii) all transform coefficients in the level 1 subband; and

(iv) all transform coefficients in the level 1, 2 and 3 subbands.

11. A method according to claim 1 wherein, in said storing step, the bits of the transform coefficients of the current image are stored in a compressed form.

12. A method according to claim 1 wherein the truncation bitplane is a function of sensor noise.

13. A method according to claim 1 wherein each image of the sequence is decompressible independently of the other images.

14. A method according to claim 1 wherein one bit is retrieved in said retrieving step.

15. A method according to claim 14 wherein the setting step comprises setting bit L(n-1) of the at least one transform coefficient of the current image to the value of the retrieved bit if

$2^{L(n-1)} <= |C| < 2^{(L(n-1)+1)}$ and the retrieved bit is zero, where $L(n-1)$ is the truncation bitplane of the previously compressed image and C is the at least one transform coefficient.

16. A method according to claim 15 wherein a significance of each coefficient is stored for bitplane L between the coding of each frame in the sequence and is used to determine if $|P| < 2^{L}$.

17. A method according to claim 16 wherein the significances are compressed before storage.

18. A method according to claim 1 wherein the set of transform coefficients is arranged in a set of blocks and the method further comprises the steps of:

determining truncation points of the blocks in the compressed bitstream of the current image, wherein a truncation point of at least one of the blocks of the current image is selected according to the current image and a truncation point selected for a corresponding block of one or more previous images, and

truncating the compressed bitstream of the current image at the determined truncation points to provide a further compressed representation of the current image.

19. A method according to claim 18, wherein associated with each block of the current image is a set of rate and distortion points, and wherein the step of determining truncation points comprises the sub-step of:

determining the truncation points of the blocks of the current image that minimize a function of the distortion points while a function of the rate points satisfies a rate constraint.

20. A method according to claim 19 wherein the step of determining truncation points comprises the sub-step of:

weighting, for each block of the current image, a distortion value corresponding to the truncation point of the corresponding block in a previous image.

21. A method according to claim 19 wherein the step of determining truncation points comprises the sub-step of:

weighting, for each block of the current image, a rate value corresponding to the truncation point of the corresponding block in a previous image.

22. A method according to claim 1 wherein the method comprises the step of:

determining regions of a current image with respect to a previous image that represent smooth areas near moving edges, and wherein, in the coding step, the transform coefficients representative of the determined regions of the current image are encoded to greater accuracy than the remaining transform coefficients.

23. A method according to claim 22 wherein the determination step of determining regions of the current image representing smooth areas near moving edges is performed in the spatial domain.

24. A method according to claim 23 wherein the determination step comprises the sub-steps of:

a first filtering sub-step for filtering a moving edge map of corresponding blocks of the current and previous images, wherein the first filtering sub-step is of a large spatial extent;

a second filtering sub-step for filtering a moving edge map of corresponding blocks of the current and previous images, wherein the second filtering sub-step is of a small spatial extent; and

a determination step for determining a ratio of the first filtered moving edge map and the second filtered moving edge map.

25. A method according to claim 22 wherein the predetermined transform is a discrete wavelet transform (DWT) and the determination step of determining regions of the current image representative of smooth areas near moving edges is performed in the wavelet domain.

26 A method according to claim 25 wherein the determination step comprises the sub-step of generating a plurality of masks for respective blocks of the DWT coefficients of the current image for excluding predominantly similar DWT coefficients in a block from the bitstream.

27. A method according to claim 18, comprising the step of:

determining regions of a current image with respect to a previous image that represent smooth areas near moving edges, and wherein, in the coding step, the transform coefficients representative of the determined regions of the current image are encoded to greater accuracy than the remaining transform coefficients.

28. A method of decompressing a compressed bitstream representative of a sequence of images, wherein the method comprises the steps of:

decoding the compressed bitstream to provide transform coefficients of a current image in the sequence;

retrieving, for at least one transform coefficient of the current image, one or more, but not all, bits of a corresponding transform coefficient of a previously decompressed image in the sequence;

setting the at least one transform coefficient of the current image to a new value that is a function of the retrieved bits; and

inverse transforming the current image with a predetermined inverse transform.

29. A method according to claim 28 wherein one bit is retrieved in said retrieving step.

30. A method according to claim 28 wherein two bits are retrieved in said retrieving step.

31. An apparatus for compressing a current image of a sequence of images, comprising:

(a) means adapted to transform the current image with a predetermined transform to provide a set of transform coefficients;

(b) means adapted to retrieve, for at least one transform coefficient of the current image, one or more, but not all, bits of a corresponding transform coefficient of a previously compressed image of the sequence, wherein the corresponding transform coefficient is truncated at a truncation bitplane and the retrieved bits comprise the least significant bit of the truncated corresponding transform coefficient;

(c) means adapted to set the at least one transform coefficient of the current image to a new value that is a function of the retrieved bits;

(d) means adapted to store one or more, but not all, bits of the at least one transform coefficient for use in compressing one or more subsequent images of the sequence; and

(e) means adapted to code the transform coefficients of the current image to provide a compressed bitstream of the current image.

32. A computer program product comprising machine-readable program code recorded on a machine-readable recording medium, for controlling the operation of a data processing apparatus on which the program code executes to perform a method of compressing a current image of a sequence of images, the method comprising the steps of:

(a) transforming the current image with a predetermined transform to provide a set of transform coefficients;

(b) retrieving, for at least one transform coefficient of the current image, one or more, but not all, bits of a corresponding transform coefficient of a previously compressed image of the sequence, wherein the corresponding transform coefficient is

truncated at a truncation bitplane and the retrieved bits comprise the least significant bit of the truncated corresponding transform coefficient;

(c) setting the at least one transform coefficient of the current image to a new value that is a function of the retrieved bits;

(d) storing one or more, but not all, bits of the at least one transform coefficient for use in compressing one or more subsequent images of the sequence; and

(e) coding the transform coefficients of the current image to provide a compressed bitstream of the current image.

33. A compressed sequence of images wherein at least one image is compressed using the methods of any one of claims 1 to 27.